

BUSINESS NOISE

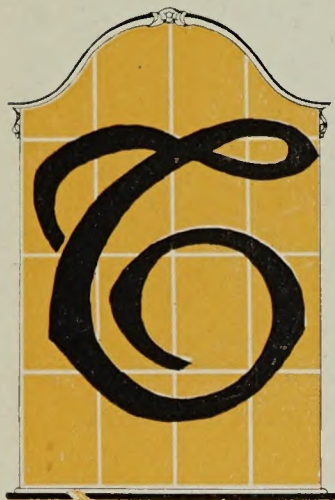
Its Cost and
Prevention



Copyright 1920
by
H. W. Johns-Manville Co.
New York

Business NOISE

Its Cost and Prevention



THE whole development of building construction and building materials during the past twenty-five years has been in the direction of POOR ACOUSTICS and consequently more noisy offices. This is particularly noticeable in the evolution of the modern office building, where three main considerations, demanded by public safety and health, have had a very radical influence on the choice of materials and the mode of construction — namely, FIRE PROTECTION, SANITATION AND DURABILITY.

This demand has naturally led to the almost exclusive use of steel, concrete, tile and hard plaster, with a minimum of wood finish, steel often being used not only for trim, but also for office furniture.

The inevitable result has been an unbearable increase in unnecessary noise, confusion and nervous excitement, which has had a marked effect on the normal efficiency of both executives and office workers. This condition has been aggravated by modern practice in office planning which favors large, open spaces, because they afford better light and ventilation and facilitate the work of the various departments through closer contact. The drawback, however, has been the decided loss in efficiency which in many cases outweighs the advantages gained under such an arrangement.

Racket from typewriters, adding machines and other mechanical appliances, telephone bells and conversation produces wearing nervous fatigue, diminished concentration, decreased efficiency, multiplied



Federal Reserve Bank, Transit Dept., New York City.
Johns-Manville Acoustical Correction Installed.

mistakes, increased expense, and errors of judgment that hamper the executive as well as the clerk.

The losses due to such conditions are not theoretical. They are actual and apparent and can be easily checked up. Investigations by Welfare Departments of corporations and others interested in scientific business management have clearly demonstrated the huge PREVENTABLE waste of money and energy due directly to poor acoustics, noise and the resulting confusion in offices.

The Phenomenon of Reverberation

Stop for a moment to consider the physical action of noise in your office. Here is what happens. Many little noises arising from conversation, dictation, typewriters, adding machines and mechanical office devices, and many other sources, none of which originates much disturbance in itself, are created in your office every minute of the working day.

Because the walls and ceilings are made of such hard, non-porous materials they absorb a very small



Armour & Co., General Offices, Union Stock Yards, Chicago, Ill.
Johns-Manville Acoustical Correction Installed.

percentage of any sound striking them and this means that any given individual sound must be reflected from surface to surface many hundred times before its energy is so far absorbed that it becomes inaudible. If, during the several seconds of time this requires, other sounds are successively generated, they, too, will be similarly prolonged and will overlap and add their energy to the first sound and to each other. This superposition produces an accumulated mass of sound many times more intense or loud than would exist if each component sound were absorbed before the next one were produced.

The phenomenon is known as reverberation. In order to understand it better it may be likened to the diffusion of light in a brilliantly illuminated room. If the walls of the room are painted white so as to reflect the maximum amount of light and if the source is very bright, the intensity or glare of the light within the room will be so great as to be uncomfortable and fatiguing to the eye. If, however, a neutral tint of gray or buff is given to the interior surfaces, so as to absorb a percentage of the



First National Bank, Check Dept., Boston, Mass.
Johns-Manville Acoustical Correction Installed.

light, the intensity is greatly reduced and the eye is thereby much relieved. An exactly analagous action takes place in diminishing the reverberation of sound by absorptive treatment.

The effect of reverberation upon the noise of typewriters, adding machines, telephone bells, conversation and all of the ordinary office disturbances as well as on the street noises entering from without, is to magnify them and cause a din that is fatal to proper concentration and nervous repose.

Actual fatigue of the nerves is engendered, similar to muscular fatigue after physical exercise. This vitally affects the well-being and efficiency of every worker in the office, from executive to office boy. It causes a multiplication of errors on the part of clerks and prevents concentration and clear thinking on the part of managers and other officials.

All this means loss of production just as surely as poor lighting, faulty heating, or bad ventilation. Business organizations, large and small, learned long ago to take care of the last named items, but the noise factor, which is equally important, has been



United States Rubber Co., General Tire Sales Office, New York City.
Johns-Manville Acoustical Correction Installed.

neglected in a great many cases—not because of a lack of appreciation of the discomforts and actual losses, but more because of lack of knowledge of how easily they can be corrected.

The Action of Johns-Manville Acoustical Correction

The remedy is simple—Johns-Manville Acoustical Correction. By the Johns-Manville System of Acoustical Correction this noise and confusion is eliminated **WITHOUT CHANGING THE ARCHITECTURAL APPEARANCE** of the rooms and it can be installed **WITHOUT INTERFERENCE WITH DAILY ROUTINE**. By the Johns-Manville System of Acoustical Correction the sound absorbing properties of a sufficient proportion of the interior surfaces of any given room are radically increased so that the period of reverberation of every individual sound can be so far reduced as to prevent overlapping and accumulation, thus reducing the total volume of noise to a minimum.



John W. Ladd Co., Detroit, Mich.
Johns-Manville Acoustical Correction Installed.

In rooms so treated, dictation can be given almost in a whisper, telephone conversation can be pitched in the lowest key, conference can be carried on in a quiet undertone. Noise, bustle, confusion, excitement—all those enemies of constructive thought and highest efficiency are eliminated.

The effect produced by Johns-Manville Acoustical Correction is remarkable. It produces a sense of comfort and quiet and of relaxed nerve tension which is hard to describe in words. There is a new sensation to be found in entering a room after the installation of Johns-Manville Acoustical Correction. It has been most aptly likened to the sensation of relief experienced when one emerges from a noisy tunnel onto the open track. The office assumes a mien of order and dignity always impressive to the visitor and helpfully restful to the worker.

Statistics show that an increase in efficiency of three-quarters of one percent in the average office will pay for the cost of Johns-Manville Acoustical Correction with interest in five years. Many office managers claim that the increased personal working



Irving National Bank, Foreign Dept., New York City.
Johns-Manville Acoustical Correction Installed.

efficiency of their employees in quiet surroundings amounts at least to ten or fifteen percent. On this conservative estimate the quieting treatment will pay for itself in three to five months. The time would be even shorter in large offices with many employees.

How These Results Are Obtained

The work of the Johns-Manville Acoustical Engineers in your office is marked by two definite accomplishments: The noise nuisance is corrected yet the architectural appearance of your office is not disturbed. This ideal condition is brought about by applying to critical surfaces, usually ceilings, but sometimes walls as well, a sufficient amount of Johns-Manville Akoustikos Felt, which is fastened securely in place and then covered with an absorptive membrane which gives it a finished surface.

Johns-Manville Akoustikos Felt has been developed particularly for the purpose of acoustical correction and office quieting. It has the highest



American Can Co., General Offices, Chicago, Ill.
Johns-Manville Acoustical Correction Installed.

possible absorbing power and at the same time is durable, non-inflammable and free from attacks of moths, rodents or vermin.

It is composed of selected long cattle hair, chemically treated, burr picked to remove all foreign substances, such as bits of dried flesh and hide, steamed to remove animal oil and then felted to the requisite density and porosity to give the proper degree of sound absorption, with an interlining of gauze to give added tensile strength.

This felt is applied in location, extent and thickness in an amount scientifically determined for each individual case, while the membrane used as a covering for the felt causes the treated areas to blend with surrounding surfaces in such a way as to be unnoticeable.

The Johns-Manville Company has devoted particular attention to developing the best materials for this class of work, as well as the technique of their installation. The scientific methods employed are the result of the researches of the late Professor Wallace C. Sabine, of Harvard University, the bene-



Procter & Gamble Co., General Offices and Treasury, Cincinnati, Ohio.
Johns-Manville Acoustical Correction Installed.

fit of whose advice and counsel the Johns-Manville Company enjoyed up to the time of his death.

The Scope of Johns-Manville System of Acoustical Correction

The comfort, profit and satisfaction of Johns-Manville Acoustical Correction is not confined to commercial offices. It is equally effective in the elimination of unnecessary and disturbing sounds, reverberation, echoes and poor acoustics in Banks, Restaurants, Churches, Theatres, Schools, Colleges, Hospitals, Gymnasiums, Indoor Swimming Pools, Rifle Ranges, Clubs, Hotels, Court Rooms, Legislative Chambers, in fact, in any place where acoustical difficulties or the noise nuisance are experienced. The scientific nature of this treatment makes it possible to plan for correcting acoustical conditions even in advance of the construction of a new building.

Since the Johns-Manville Company first undertook this class of work in 1911, it has installed acoustical treatment in hundreds of institutions, some of



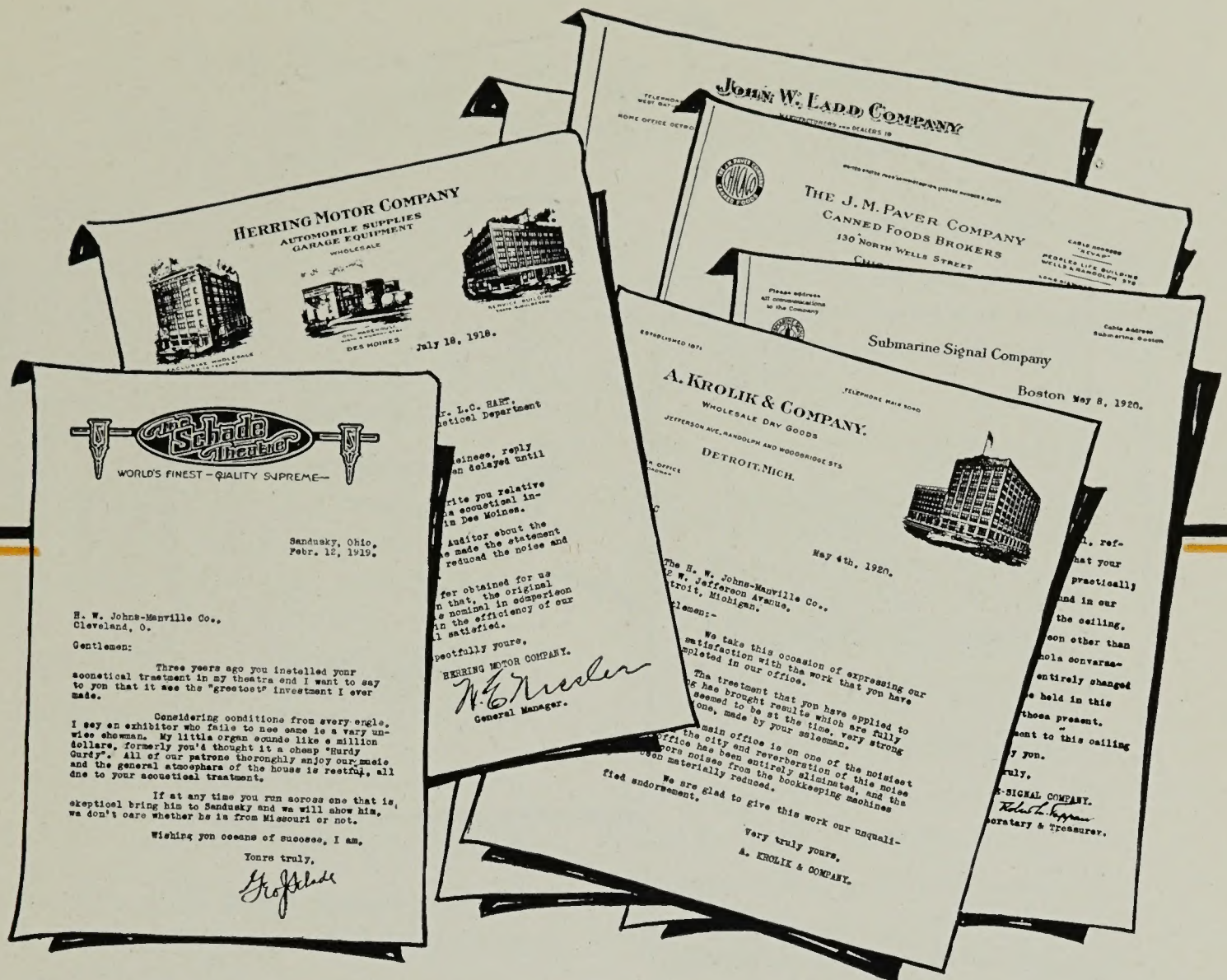
Christie, Brown & Co., Ltd., Toronto, Canada.
Johns-Manville Acoustical Correction Installed.

which are shown in this book under “A Few Representative Installations of Johns-Manville Acoustical Correction,” on the last page.

The Answer to Your Noise Problem

The toll that noise takes is a considerable drain on your resources—physical, nervous and financial. It goes on all day long, year after year and its total is huge, but because it takes only a bit at a time it passes unnoticed. While the business man of to-day has not the time to make a study of reverberation, echoes, resonance and interference, he does want to know “What is the easiest, quickest and best way for me to eliminate confusing noises and loss of efficiency in my office?”

The answer is—Johns-Manville Acoustical Correction. A request made to the nearest Johns-Manville branch will bring you engineering service and full information concerning your particular problem.

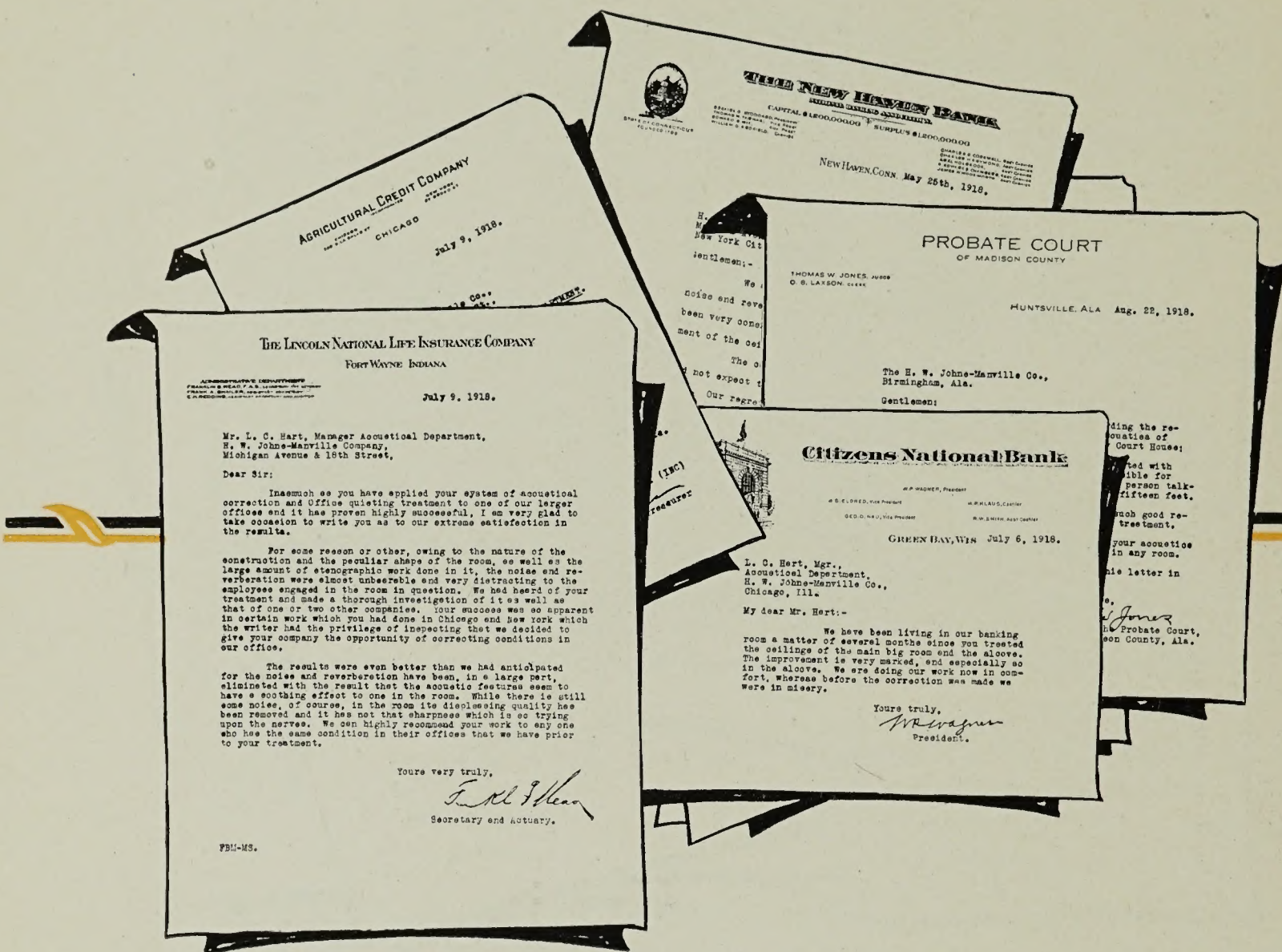


A Few Testimonial Letters

What Others Think of Johns-Manville Acoustical Correction

The few testimonial letters on this and the following page show the enthusiastic approval of those who have so greatly benefited by the installation of Johns-Manville Acoustical Correction.

They also indicate the practically unlimited scope of the field in which this scientific corrective treatment can be used in the solution of acoustical difficulties and the elimination of the costly noise nuisance. It will be noted that the letters are representative of practically every phase of endeavor—banking, mercantile, automotive, theatrical, legal and insurance.



A Few Testimonial Letters

Representative Installations

The installations on the next page by no means show the many hundreds of satisfactory installations of Johns-Manville Acoustical Correction in the various sections of the United States and Canada.

A request sent to the nearest Johns-Manville Branch, a list of which is shown on the back cover, will bring a pamphlet containing a complete list and permit a ready reference to those installations in your city or its immediate vicinity.

A Few Representative Installations of Johns-Manville Acoustical Correction

NEW ENGLAND STATES*

A. C. Lawrence Leather Co., Boston, Mass.
City National Bank, Danbury, Conn.
First National Bank, Boston, Mass.
Merchants National Bank, Worcester, Mass.
New Haven Bank, New Haven, Conn.
Old Colony Trust Co., Boston, Mass.
Standard Oil Co., E. Providence, R. I.
Submarine Signal Co., Boston, Mass.
The Norton Co., Worcester, Mass.

MIDDLE ATLANTIC STATES

American Can Company, New York City and Chicago.
Beechnut Packing Co., Canajoharie, N. Y.
Bullard Machine Tool Co., Bridgeport, Conn.
Chase National Bank, New York City.
Dining Room, Chamber of Commerce, Pittsburgh, Pa.
Federal Reserve Bank, New York City, Buffalo, Atlanta, Pittsburgh, Dallas and Helena, Mont.
General Electric Co., Schenectady, N. Y.
Guaranty Trust Co., New York City.
International Y. M. C. A., New York City, Headquarters.
Irving National Bank, New York City.
Lee, Higginson & Co., New York City.
Link Belt Co., Philadelphia, Pa.
New York Butchers' Dressed Meat Co., New York City.
Pennsylvania Rubber Co., Jeannette, Pa.
Remington Typewriter Co., New York City.
U. S. Rubber Co., New York City.
Western Union Telegraph Co., New York City, Chicago, Cleveland, and Detroit.
Worthington Pump & Machinery Corp., New York City.

CENTRAL STATES

A. Krolik & Co., Detroit, Mich.
Armour & Co., New York, Chicago, St. Paul, Omaha, St. Louis, and Kansas City.
Farwell, Ozmun, Kirk & Co., St. Paul, Minn.
First Wisconsin National Bank, Milwaukee, Wis.
Goodyear Tire & Rubber Co., Akron, Ohio.
First National Bank, Mobile, Ala.
Harris Trust & Savings Co., Chicago, Ill.
Herring Motor Co., Des Moines, Ia.
J. T. Ryerson & Son, Chicago, Ill.
John W. Ladd, Detroit, Mich.
Ludowici-Celsdon Co., Chicago, Ill.
Mansfield Sheet & Tin Plate Co., Mansfield, Ohio.
Merchants National Bank, St. Paul, Minn.
Pompeian Manufacturing Co., Cleveland, Ohio.
Procter & Gamble Co., Cincinnati, Ohio.
Southwestern National Bank of Commerce, Kansas City, Mo.

WESTERN STATES

Bank of California, Seattle, Wash.
California Packing Association, San Francisco, Calif.
Colorado Packing & Provision Co., Denver, Colo.
First National Bank, El Paso, Tex.
Lunch Room, Adolphus Hotel, Dallas, Tex.
Sperry Flour Mills Co., Tacoma, Wash.
Christie, Brown & Co., Ltd., Toronto, Ont.

*Arbitrary geographical subdivisions

JOHNS-MANVILLE

Incorporated

Executive Offices: NEW YORK

Akron	Erie	Sacramento
Albany	Great Falls	Saginaw
Atlanta	Houghton	St. Louis
Baltimore	Houston	St. Paul
Birmingham	Indianapolis	Salt Lake City
Boston	Kansas City	San Diego
Buffalo	Los Angeles	San Francisco
Canton	Louisville	Seattle
Chicago	Memphis	Stockton
Cincinnati	Milwaukee	Syracuse
Cleveland	Minneapolis	Tacoma
Columbus	Nashville	Toledo
Dallas	Newark	Tulsa
Dayton	New Orleans	Washington
Denver	Omaha	Wilkes-Barre
Des Moines	Philadelphia	Youngstown
Detroit	Pittsburgh	Havana, Cuba
Duluth	Portland	
El Paso	Rochester	

CANADIAN JOHNS-MANVILLE CO., LIMITED

Hamilton	London	Montreal	Ottawa
Toronto	Vancouver	Winnipeg	Windsor